



## VEGETATION MANAGEMENT GUIDELINE

White Mulberry (*Morus alba* Linnaeus)

### SPECIES CHARACTER

#### DESCRIPTION

White mulberry is a medium-sized tree that may grow to a height of about 50 feet (15.3 meters) with a trunk diameter of about 2 feet (0.6 meters). The bark is ash-orange to light brown becoming darker and heavily furrowed on mature trees. Twigs have a zigzag shape and are tan or yellowish and reddish brown. Buds are about 1/6 inch (0.4 centimeter) long, pointed and smooth. Simple leaves are alternate, with two or three lobes, up to 5 inches (12.7 centimeters) long, shiny on the upper surface, and mostly hairless on the undersides. Sap is milky white.

Staminate and pistillate flowers appear with leaves in April and are borne separately on the same tree or on different trees. Small, white, pink or purplish fruits appear in June or July as aggregates of drupes. The fruit is edible and sweet, but may be rather tasteless. White mulberry is frequently confused with the less common, native red mulberry (*Morus rubra*), the leaves of which have rough upper surfaces and short, white hairs on the undersides. The color of the fruit is not an adequate way to distinguish between red and white mulberry. Both red and white mulberry are highly variable and may form hybrids. It is not known how often or if hybridization occurs within Illinois populations. White mulberry should be accurately identified before attempting any control measures. If identification of the species is in doubt, the plant's identity should be confirmed by a knowledgeable individual and/or by consulting appropriate books.

#### DISTRIBUTION

White mulberry is native to China. It was introduced to North America during colonial times in a failed attempt to create a silkworm industry. It was widely planted to attract birds away from more valuable fruits such as cherry and blueberry. White mulberry has become naturalized, and is found throughout the United States.

#### HABITAT

White mulberry is very common in shelter belts and along roadsides. It may also occur in woods and old fields in both uplands and bottomlands. Seeds are readily dispersed by birds, which may partly account for the pervasiveness of this species in a variety of habitats.

#### LIFE HISTORY

White mulberry is dioecious with staminate and pistillate flowers either born separately on the same or different trees. Each of the abundant fruits contains a dozen or more seeds. If not eaten first, the fruits ripen and drop from June to August. Seeds may germinate the same year or enter the seed bank. Growth is rapid. Reproduction may occur from root sprouts. Dispersal without animal facilitation would probably tend to be slow.



## EFFECTS UPON NATURAL AREAS

Once individual white mulberries become well established from nearby seed sources, further invasion may have the potential to be rapid, as increasingly poor fuel loads beneath the mulberries render prescribed fires less effective. In addition, white mulberries occurring in normally dry, highly lighted habitats form microclimates, which allow for further ecological changes such as the increased survival of light- and drought-intolerant species.

## CONTROL RECOMMENDATIONS

### RECOMMENDED PRACTICES IN NATURAL COMMUNITIES OF HIGH QUALITY

#### *Initial efforts in areas of heavy infestation*

A combination of cutting and burning should allow for effective control. Cutting may be most effective if done during the summer months when energy reserves in roots are low. Adverse weather in the subsequent fall and winter may further weaken the plants. Herbicide treatment, as described below, should be carefully and judiciously conducted to minimize re-sprouting. If re-sprouting is allowed to occur, a high density of vigorous sprouts may likely result. Further cutting may then be necessary.

On small trees lacking thick bark, an ax, saw, or chainsaw can be used to girdle through the bark and phloem only. Xylem should be left undamaged. Girdling is most effective by making two parallel cuts slightly deeper than the cambium, 3-4 inches (8 to 10 centimeters) apart. Bark can then be knocked off using a blunt instrument. The girdle should be monitored over several weeks following the cut to ensure that bark does not heal over the girdle. Girdling may be less practical on large trees with thick bark.

Periodic prescribed fire will prevent most young white mulberries from becoming established. Large white mulberries are probably resistant to small ground fires, and will likely re-sprout even if the above-ground portion of the tree is extensively damaged by larger fires. Cutting and/or girdling with herbicide treatment, as described below, will then be necessary. Before commencing any prescribed burns, open burning permits must be obtained from the Illinois Environmental Protection Agency and often the local appropriate agencies too. Burns should be administered by persons trained or experienced in conducting prescribed burns, and proper safety precautions should be followed.

#### *Initial efforts in areas of light infestation*

Same as given above for heavily infested areas.

#### *Maintenance control*

Regular prescribed fire will hinder establishment of young white mulberry plants. Repeated cutting and treating may be necessary to control re-sprouting of larger individuals.

### RECOMMENDED PRACTICES ON BUFFER AND SEVERELY DISTURBED SITES

#### *Initial efforts in areas of heavy infestation*

Same as given above except that herbicides discussed below can be more widely used. In addition, for areas lacking any natural qualities, entire trees, including roots, may be extracted, thereby eliminating any chance for re-sprouting.

Triclopyr herbicide (Garlon 3A or Garlon 4) is effective for controlling white mulberry. Garlon 3A (50% solution mixed with water) and Garlon 4 (20% solution mixed with a mineral or plant-oil based carrier) may be applied by spraying or wiping onto cut surfaces such as stumps and girdle cuts, and should be applied soon after cutting; both may also be applied to the root collar. Diesel fuel should not be used as a carrier for Garlon 4. Garlon 4 should not be applied when there is snow or ice on the ground or on the trunk of the tree in areas where this water may drain directly into a stream or other body of water. Treatment with Garlon 3A and 4 may be at any season, but application during the dormant season reduces the chance of affecting non-target species.

Garlon 4 may be used for basal bark treatment on stems 6 inches (15 centimeters) or less in basal diameter by spraying or painting a 20 to 30% solution of Garlon mixed with a mineral or plant-oil based carrier around the trunk up to a height of 12 to 15 inches (30 to 38 centimeters). Spraying must be thorough. Garlon 4 is selective against broadleaf species, so it may be used in areas where desirable grasses are present. Do not apply Garlon 4 if snow, ice, or water are present on the ground or stems.

By law, herbicides may only be applied as per label directions and by licensed herbicide applicators or operators when working on public properties or lands not owned by the applicator or operator. Always apply herbicides backing out of a property to minimize the chance of exposure to the chemical.

#### *Initial efforts in areas of light infestation*

Same as given above for heavily infested areas. Regular prescribed fire should control seedlings and saplings.

#### *Maintenance control*

Same as given above for heavily infested areas.

### **FAILED OR INEFFECTIVE PRACTICES**

Although many pathogens are known to affect white mulberry, no organisms have as yet been identified that can be used for biological control of white mulberry in natural or sensitive areas.

### **REFERENCES**

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